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Proceedings of the Regional Assessment of Bay of Fundy Scallop (*Placopecten magellanicus*) in Scallop Production Areas (SPAs) 1A, 1B, and 3-6

November 17-18, 2015
Dartmouth, Nova Scotia

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Canada

Foreword

The purpose of these Proceedings is to document the activities and key discussions of the meeting. The Proceedings may include research recommendations, uncertainties, and the rationale for decisions made during the meeting. Proceedings may also document when data, analyses or interpretations were reviewed and rejected on scientific grounds, including the reason(s) for rejection. As such, interpretations and opinions presented in this report individually may be factually incorrect or misleading, but are included to record as faithfully as possible what was considered at the meeting. No statements are to be taken as reflecting the conclusions of the meeting unless they are clearly identified as such. Moreover, further review may result in a change of conclusions where additional information was identified as relevant to the topics being considered, but not available in the timeframe of the meeting. In the rare case when there are formal dissenting views, these are also archived as Annexes to the Proceedings.

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SUMMARY

The Bay of Fundy scallop fishery is fished by three scallop fleets: Full Bay, Mid Bay, and Upper Bay. Full Bay license holders are permitted to fish throughout the Bay of Fundy. Mid Bay license holders have access to all areas north of the Mid Bay Line. Upper Bay license holders are restricted to the upper reaches of the Bay. In support of the fishery for scallop in the Bay of Fundy Scallop Production Areas (SPAs) 1, 3, 4, 5, and 6, Fisheries and Oceans Canada (DFO) Fisheries and Aquaculture Management Branch (Maritimes Region) asked DFO Science for an assessment of resource status and the consequences of various harvest levels to inform management measures and recommendations for the 2015/2016 fishing season. Scallop Production Area 2 is considered to be marginal habitat for scallops and is not monitored regularly; it was last assessed in 2006 and was not reported upon here. The last full assessment of Bay of Fundy Scallop in SPAs 1A, 1B, and 3-6 was conducted in November 2013. An interim assessment update for the fishery was conducted in November 2014. As part of the Regional Science Advisory Process, a meeting was held on November 17-18, 2015, at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia, to assess Bay of Fundy Scallop in SPAs 1A, 1B, and 3-6. One Working Paper was reviewed at the meeting entitled 'Scallop Production Areas in the Bay of Fundy: Stock Status for 2015 and Forecast for 2016'. Peer reviewers and meeting participants felt that the Working Paper was thorough, scientifically sound, and well done. Meeting participants reviewed the Science Advisory Report section-by-section. There was overall support for the proposed Science Advisory Report provided minor edits discussed at the meeting were adopted in the final version. The Science Advisory Report received consensus at the meeting. This Proceedings document constitutes a record of meeting discussions and conclusions.

Compte rendu de l'évaluation régionale du pétoncle de la baie de Fundy (*Placopecten magellanicus*) dans les zones de production de pétoncles 1A, 1B et 3-6

SOMMAIRE

La pêche du pétoncle de la baie de Fundy comprend trois flottilles : la flottille de la totalité de la baie, la flottille du milieu de la baie et la flottille de la partie supérieure de la baie. Comme leur nom l'indique, les titulaires de permis pour la totalité de la baie peuvent pêcher dans toute la baie de Fundy. Quant aux titulaires de permis pour le milieu de la baie, ils ont accès à toutes les zones qui se trouvent au nord de la ligne de démarcation du milieu de la baie. Enfin, les titulaires de permis pour la partie supérieure de la baie n'ont accès qu'aux eaux du fond de la baie. Pour appuyer la pêche du pétoncle dans les zones de production de pétoncles (ZPP) 1, 3, 4, 5 et 6 de la baie de Fundy, la Direction de la gestion des pêches et de l'aquaculture de Pêches et Océans Canada (région des Maritimes) a demandé au Secteur des sciences du Ministère d'effectuer une évaluation de l'état de la ressource et d'indiquer les conséquences de divers niveaux de récolte afin d'éclairer les mesures de gestion et les recommandations pour la saison de pêche 2015-2016. La zone de production de pétoncles 2 est considérée comme un habitat marginal du pétoncle et ne fait pas l'objet de surveillance régulière; elle a été évaluée pour la dernière fois en 2006 et ne fait pas partie de la présente évaluation. La dernière évaluation complète du pétoncle de la baie de Fundy dans les ZPP 1A, 1B et 3-6 a eu lieu en novembre 2013. Une mise à jour provisoire de l'évaluation de la pêche a été effectuée en novembre 2014. Dans le cadre du processus d'avis scientifique régional, une réunion a eu lieu les 17 et 18 novembre 2015 à l'Institut océanographique de Bedford, à Dartmouth, en Nouvelle-Écosse, afin d'évaluer le pétoncle de la baie de Fundy dans les ZPP 1A, 1B et 3-6. Un document de travail est examiné au cours de la réunion : Scallop Production Areas in the Bay of Fundy: Stock Status for 2015 and Forecast for 2016. Les pairs examinateurs et les participants sont d'avis que le document de travail est détaillé, rigoureux sur le plan scientifique et bien fait. Les participants examinent l'avis scientifique, section par section. En général, ils donnent leur accord à l'avis scientifique proposé, sous réserve que les modifications mineures discutées lors de la réunion soient adoptées dans la version définitive. L'avis scientifique fait l'objet d'un consensus au cours de la réunion. Le présent document est un compte rendu des discussions et des conclusions de la réunion.

INTRODUCTION

The Bay of Fundy scallop fishery is fished by three scallop fleets: Full Bay, Mid Bay, and Upper Bay. Full Bay license holders are permitted to fish throughout the Bay of Fundy. Mid Bay license holders have access to all areas north of the Mid Bay Line. Upper Bay license holders are restricted to the upper reaches of the Bay. The fishery is managed using limited entry, drag gear size limits, seasonal closures, minimum shell height, and meat count. The drag gear width limit is 5.5 m with a ring size of not less than 82 mm inside diameter. The Full Bay Fleet operates under an Individual Transferable Quota (ITQ) system. The Mid Bay and Upper Bay fleets fish with competitive quotas. Total Allowable Catches (TACs) are set and landings are reported in terms of meat weights (adductor muscles). In support of the fishery for scallop in the Bay of Fundy Scallop Production Areas (SPAs) 1, 3, 4, 5, and 6, the Fisheries and Oceans Canada (DFO) Fisheries and Aquaculture Management Branch (Maritimes Region) asked DFO Science for an assessment of resource status and the consequences of various harvest levels to inform management measures and recommendations for the 2015/2016 fishing season. Scallop Production Area 2 is considered to be marginal habitat for scallops and is not monitored regularly; it was last assessed in 2006 (DFO 2007) and was not reported upon here.

The last full assessment of Bay of Fundy Scallop in SPAs 1A, 1B, and 3-6 was conducted in November 2013 (DFO 2014). An interim assessment update for the fishery was conducted in November 2014 (DFO 2015). As part of the Regional Science Advisory Process, a meeting was held on November 17-18, 2015, at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia, to assess Bay of Fundy Scallop in SPAs 1A, 1B, and 3-6. The meeting Chairperson, Ms. Tara McIntyre, first introduced herself, followed by an introduction of meeting participants (Appendix 1). The Chair thanked meeting participants for attending the DFO Science Advisory Process and introduced the two peer reviewers for the meeting: Mr. Brad Hubley and Ms. Michelle Greenlaw. The Chair then provided a brief overview of the Canadian Science Advisory Secretariat (CSAS) science advisory process and invited participants to review the meeting Terms of Reference (Appendix 2) and Agenda (Appendix 3). Minor revisions were made to the Agenda. To guide discussion, one Working Paper was provided to meeting participants in advance of the meeting date on November 10, 2015. This Proceedings document constitutes a record of meeting discussions and conclusions.

REVIEW AND DISCUSSION

AQUATIC INVASIVE SPECIES *DIDEMNUM VEXILLUM* IN THE BAY OF FUNDY

Presentation: Update on Pancake Batter Tunicate in the Bay of Fundy

Science Lead: A. Moore
Rapporteur: K. Curran

The science lead reviewed presence of the aquatic invasive species *Didemnum vexillum* (*D. vexillum*), commonly referred to as 'pancake batter' tunicate, in the Bay of Fundy and throughout Atlantic Canadian waters. It was noted that *D. vexillum* in the Bay of Fundy is currently associated with the seafloor in three areas: Minas Basin, off Digby, and off Yarmouth, although it does occur in marinas and ports in locations outside Atlantic Canada. Its natural growth, distribution, and spread vary with water temperature, salinity, and time of year. However spread of *D. vexillum* can also occur via fragmentation and anthropogenic vectors, such as fouling on vessels. The analysis looked at the distribution of *D. vexillum* over time associated with vessel traffic throughout the region. In the last 5 years, the greatest amount of maritime traffic from locations with *D. vexillum* to Atlantic Canada came from the northeastern United

States. It was noted in recent years that vessel traffic in the Bay of Fundy/Minas Passage has decreased, likely due to closure of a gypsum mine in Hantsport, Nova Scotia.

The science lead indicated there is an aim to develop habitat suitability maps and to integrate recreational boating into an analysis of all vessel traffic information to create risk maps for *D. vexillum* in Atlantic Canada that might be useful in context of the scallop resource. A meeting participant inquired if *D. vexillum* spread fast and if it posed a danger to the scallop fishery. It was noted again that its rate of growth depends on various environmental factors and that attempts in other locations around the world to eradicate the species have been unsuccessful. Coordinates of known *D. vexillum* presence throughout the region are published in Vercaemer et al. (2015). A copy of the manuscript was made available to meeting participants.

STOCK ASSESSMENT OF BAY OF FUNDY SCALLOP

Working Paper: Scallop Production Areas in the Bay of Fundy: Stock Status for 2015 and Forecast for 2016. CSAM Working Paper 2015/11.

Science Leads: L. Nasmith & Jessica Sameoto
Rapporteur: K. Curran

Overview

The science lead introduced the assessment, noting that the presentation would follow the general structure of the Working Paper. The presentation began with a general overview of the fishery and stock survey, followed by a detailed discussion of assessment results for each SPA. In terms of the general overview, the science lead described the fishery management areas and associated fishing fleets. This was followed by a brief review of the annual stock survey. It was noted that 593 survey tows were completed in the 2015 survey, with both live and dead scallops being recorded (dead scallops are referred to as 'clappers'; that is, a dead scallop still connected at the hinge). The survey design (including changes to the survey in 2015), sampling protocols, and types of measurements (e.g., aging information) were reviewed. The science lead noted that this was the first year that the population model was used in SPA 6. The population model and growth model applied to all SPAs for assessment purposes were then reviewed.

A peer reviewer inquired if the condition and growth model could be applied to areas in which observed data did not exist; that is, can you use average condition for survey tows that are not sampled for condition. Further, the peer reviewer inquired if such a gap biases the results (e.g., in the outer area of SPA 3), which in turn might affect modeled biomass estimates. A member of the science team responded that the average condition from the sampled tows is used to predict for those tows that are not sampled; however, depth was found to be, and is incorporated, as an important covariate in the meat weight-shell height model. Depth is collected for all tows and, therefore, is incorporated when conducting predictions of condition even for those tows that were not sampled. The member further noted that, in relation to SPA 3, the outer area of SPA 3 still undergoes detailed meat weight-shell height sampling. When condition is predicted for this SPA, an influence of depth is observed via the sampled data in that samples from the deeper tows tend to have poorer condition, with this spatial pattern being captured in the model using depth as a covariate. The peer reviewer responded that the new approach is not necessarily a condition factor, and estimates of condition factor made in the past are likely not comparable to condition presently being estimated under the new approach.

It was suggested this difference in condition estimates be noted in the Working Paper. A member of the science team responded that this difference is defined already in the Working Paper, with the past 'condition factor' being defined as the ratio of meat weight over the cube of

shell height. The new term being used to describe the new approach to the meat weight-shell height modelling was explained as being referred to as 'condition' not 'condition factor', where condition is defined as the meat weight (grams) for a shell of 100 mm. However, it was agreed that the Working Paper would be reviewed to ensure that this distinction was evident. A meeting participant inquired if the abundance of clappers has changed over time. The science lead noted that it has varied from year-to-year, although there has not been any large variation observed over the recent time series (referring the meeting participant to figures presented in the Working Paper). The science lead noted there were no concerns regarding clappers identified during the 2015 survey.

Detailed assessment results for each SPA were then presented individually: 1A; 1B (sub-divided into Scallop Fishing Areas (SFA) 28B, 28C and 28D); 3; 4 and 5; and 6. For each SPA, the science lead began with a brief review of the management area, associated fleets, and survey design. This was followed by a presentation of various data time series and spatial maps of landings and TACs, catch rate and effort, shell height frequencies, and the distribution of pre-recruits, recruits, and commercial-sized scallop abundance. The science lead emphasized the importance of accurate fishery logs to the success of the stock assessment for the fishery. A fit of modeled biomass to the survey biomass was then presented, including a projection for the upcoming year and goodness of fit to evaluate model performance. Last, a harvest scenario table was presented, which outlined a range of catches with associated exploitation rates, including probabilities of the stock dynamics associated with each catch scenario.

For SPA 6, the 2015 assessment was the first year the Bay of Fundy assessment modeled was applied to the area. Given this, the science lead briefly reviewed modeled inputs for the assessment, as well as the approach used for assessing SPA 6 in the past. The science lead further noted that in 2014 (a stock interim update year), following discussion with members of the DFO Fisheries and Aquaculture Management Branch, it was agreed that DFO Science would provide advice for SPA 6 in its entirety rather than by subarea (given survey indices by subarea were not well aligned with the fishery), which had been done in previous years. The new approach drew upon VMS data from the fishery from 2002-2014 to re-stratify the survey for the area, as differentiated between Inside VMS and Outside VMS strata. In 2015, the survey indices were further improved by re-stratifying the Inside VMS stratum (Inside VMS stratum was defined by a threshold of greater than or equal to 21 hours of fishing per square-kilometre over the period 2002-2014) and redefining the Outside VMS stratum (defined by a combination of the historical survey extent and historical survey index). In applying this approach, the survey indices aligned much more closely with the fishery.

The new survey design applied to SPA 6 was used for the 2015 survey whereas survey tows from 1997-2014 were reassigned to correspond to the new design. The SPR continued to be used as the survey design in this area. Given that reference points for SPA 6 are not defined in terms of commercial biomass, as they are for the other modeled areas, nor was interim advice requested for SPA 6 for 2016/2017, the harvest scenario table looked different from the tables for other SPAs. Notably, since no interim TAC is set for the fishery in this area, the table did not project into the subsequent future year. Further, DFO Science was not aware that the removal reference used in the rest of the areas (i.e., $c = 0.15$) applied to SPA 6, so values that were presented were defined across a larger range of exploitation (up to $e = 0.2$). The science lead clarified that a removal rate of 0.15 was used throughout the rest of the scallop fishery in the Bay of Fundy, with the resource advisor noting that the draft DFO Integrated Fishery Management Plan for the fishery referenced this value for SPA 6. Science indicated that the

final version of the Working Paper would be consistent with this and only present values up to the removal reference level.[1]

The assessment results presented for each area followed those presented in the Working Paper. It was noted that the scallop stocks in all SPAs were in the healthy zone. The science lead noted there were no fishery observer trips for the Bay of Fundy scallop fishery in 2014/2015, so no fishery bycatch information was reported upon in the 2015 assessment. The science lead did note however that the most recent information on bycatch was available in the literature (see: Sameoto and Glass, 2012).

Discussion

SPA 1A

A peer reviewer requested clarity regarding the definition of exploitation for assessment purposes, and the science lead responded: Exploitation = Catch/Biomass + Catch. Another peer reviewer inquired where the value of exploitation used in the harvest scenario table came from (i.e., the value of ≥0.15). The science lead noted that it is the removal reference exploitation for the Bay of Fundy. The value represents an exploitation rate above which biomass tends to decline and below which biomass tends to increase, based on past observations. Further, equilibrium analyses used to calculate maximum sustainable yield exploitation rates near 0.15 resulted in the highest median catches, while fishing at lower exploitation rates resulted in higher median biomass (see: Nasmith et al. 2014). The science lead noted that the fishery commences before the stock assessment is complete, so the advice for two years out (e.g., 2016/2017) provides guidance on an interim TAC and associated probability of exceeding the removal reference of 0.15, until the assessment has been completed – this approach is associated with a Harvest Control Rule for the fishery.

A peer reviewer commented on the spatial distribution figures for condition and meat count, noting that the interpolation being used appeared to assume a value of zero outside of the data range. The reviewer further noted that such a method may not be a good assumption for such analyses and that an alternative would be to use a distribution plot to establish an appropriate extent polygon. The science lead clarified that the analysis that was used only applied to the graphical presentation of the spatial data and did not affect the data incorporated into the model. A member of the science team did note, however, that the scale of data, and redefined boundaries, could be explored further in support of improved graphical presentation purposes. The peer reviewer further noted the small error bounds in the recruit biomass analysis, and the science lead responded that the error was a function of the survey Coefficient of Variation also being small.

A meeting participant noted changes in fishing patterns, having observed an increase in catch both beyond the western portion of the survey area and inshore of the survey area in SPA 1A (e.g., the meeting participant estimated that 10% of landings came from these areas in 2014). The participant inquired if it was possible to modify survey locations to capture these other areas being fished. The science lead responded that this could be discussed with the science lead on the survey. Last, it was requested by a peer reviewer that increased detail regarding the survey design be included in the Working Paper.

[1] Following approval of the meeting Science Advisory Report and meeting Proceedings, it was determined that exploitation scenarios up to 0.2 be included in the harvest scenario table for SPA 6, to provide further details on the current productivity and stock status in this SPA. These additional values were presented at the Regional Advisory Process meeting, as well as included in the meeting Working Paper. Inclusion of these additional values in the meeting Research Document do not alter the science advice, rather they have been included to provide additional context for the fishery in this SPA.

SPA 1B

There was general discussion regarding why the closest harvest scenario to a median scenario (i.e., 50% probability of increase) was a probability of 47% increase. The science lead indicated that the 47% scenario might be an artefact of mean versus median values used in the underlying analysis, and noted that this would be revisited to ensure it was correct. A meeting participant then requested clarity about the harvest scenario table itself, asking if it was the same as last year. The science lead noted that the numbers in the table would have changed since last year and that the range of catch is larger relative to last year. That is, last year a biomass increase at the assumed exploitation rate was projected to occur this year, which was in turn observed for this year. Last, the science lead clarified that changes in the numbers presented in the harvest scenario tables between years is due to many factors; for example, changes in observed recruitment, condition, and exploitation rate, to name a few.

A meeting participant inquired if the harvest scenario table included an element that captured the previous year's commercial biomass, given the table, as presented, only included information on the current year and projections for the upcoming year; the participant felt that a limitation was that recruitment was not incorporated into presented values from the previous year. The science lead responded that recruitment observed in the current year is incorporated in the model, as recruitment is a model input that increases to be of commercial size the following year. Further, in the projections for the following year the recruitment is captured in the harvest scenario tables for that year (e.g., recruitment from the previous year (i.e., 2015) is captured in commercial biomass estimates for the following year (i.e., 2016)). It was clarified that the overall intent of the tables are to present harvest scenarios for the upcoming (2015/2016) fishing year with associated risk probabilities, and in some areas (SPAs 1, 3, 4), also present harvest scenarios with associated risk of exceeding the removal reference exploitation for the following fishing year (2016/2017). Notwithstanding, the harvest scenario table was explained in a bit more detail for sake of interpretation by meeting participants. Last, a meeting participant noted that a couple of landing values presented in the Working Paper should be verified for accuracy.

SPA 3

The science lead clarified that the survey strata in SPA 3 were modified for the assessment in 2012 using Vessel Monitoring System (VMS) data from the fishery. Three areas were identified:

1. St. Mary's Bay;
2. Brier Island/Lurcher Inside VMS (BILU Inside VMS); and
3. Brier Island/Lurcher Outside VMS (BILU Outside VMS).

Based on these survey strata, the science lead highlighted the good modeled fit to survey biomass for SPA 3, with slightly broader confidence intervals compared to results of other SPAs. The science lead further noted that when actual growth was incorporated into the analysis the modeled projections and survey observations improved in agreement. From 2011 to 2014, however, the model did underestimate commercial biomass but was still within the 90 credible interval. It was suggested that this may be attributable to the very rapid increase in biomass observed for this SPA, with the model slightly lagging survey observations during times of rapid biomass increase (similarly, the model can also lag behind for periods of rapid decrease).

A peer reviewer noted that some recruitment biomass in SPA 3 still appeared to be missing when you considered the survey numbers, suggesting this may be the result of either observation error (believed to be small) or process error. The science lead replied that when

reviewing model diagnostics in 2014 this was noted at the time and this is what promoted the review of the recruitment indices to use the Sampling with Partial Replacement (SPR) estimates rather than just the simple mean for the 2015 assessment. The science lead indicated that the improvement to the recruit index from using the SPR, however, did not fully account for the potential mismatch between recruitment and commercial numbers and indicated that the spatial patchiness of biomass in the area may also be contributing to this. The science lead clarified that moving forward there would be a review of any need to re-stratify the survey to improve results with modeled inputs in mind (i.e., to better capture recruitment in SFA 3). Alternatively, an increased number of survey tows would also be considered (resources permitting). The science lead emphasized that such changes would require significant re-analysis and redefinition of fishery Reference Points, so the science team decided not to pursue this for the 2015 assessment given other more pressing requirements for 2015. It was agreed that this would be described more fully in the Working Paper. Last, a meeting participant noted that BILU inside VMS was being moved by industry further north due to changing fishing behaviour, so recommended that future surveys include more tows in this area. Similarly, the meeting participant recommended that increased tows further south towards Yarmouth might also be of benefit.

SFAs 4 and 5

Peer reviewers and meeting participants had no questions or concerns regarding this aspect of the assessment. There was no discussion following a presentation of results for these SFAs.

SFA 6

A meeting participant inquired if any survey tows had been undertaken in the grey zone. The science lead noted that DFO does not survey this zone, although it was noted at the meeting that the U.S. National Marine Fisheries Service (NMFS) and the State of Maine both survey the zone on a periodic basis. Another meeting participant inquired if meat weight sampling led by industry for SFA 6 would be continued now that a model is used for assessment purposes. The science lead responded that given the model appears to work well for the area, such sampling was likely no longer required (particularly given the survey is now more closely aligned with the fishery in the area). The science lead did, however, note that the results from the industry meat weight sampling in 2014 and 2015 were presented in the Working Paper. Last, a meeting participant inquired if there were any privacy concerns including VMS information in the Working Paper. The science lead noted that the data was presented in a manner consistent with DFO's data policies and with *Privacy Act* considerations in mind.

Conclusions

The science lead noted that all scallop stocks in the Bay of Fundy are in the healthy zone. There were no further comments from peer reviewers or meeting participants on the Working Paper. In general, both the peer reviewers and meeting participants felt that the stock assessment was well done and easy to follow. Peer reviewers were advised to provide any additional, minor editorial comments on the Working Paper to the science team directly.

SCIENCE ADVISORY REPORT

Science Advisory Report: Assessment of Scallops (*Placopecten magellanicus*) in Scallop Production Areas 1 to 6 in the Bay of Fundy

Science Lead: L. Nasmith
Rapporteur: K. Curran

Meeting participants reviewed the Science Advisory Report section-by-section. The document was similar to the last version of the advisory report agreed upon in 2013 (DFO 2013f). Minor edits were suggested by peer reviewers and meeting participants. In the section for SFAs 4 and 5, a peer reviewer requested that Tables 4 and 5 be replaced by a figure. It was further advised that the Science Advisory Report use consistent terminology when describing the harvest scenario tables. In general, there was support for publishing the proposed Science Advisory Report provided edits discussed at the meeting were adopted in the final version. The Science Advisory Report received consensus at the meeting.

CONCLUSIONS

Meeting participants felt that the Working Paper presented sound scientific analyses based on the best available information on Bay of Fundy Scallop in SFAs 1/4, 1B, and 3-6, and was acceptable for publication as a Research Document pending revision following discussions at the meeting. There was also support for publishing the proposed Science Advisory Report provided edits discussed at the meeting were adopted in the final version. Sincere efforts were made in the science peer review process to acknowledge and address all comments and concerns raised by meeting participants provided they were appropriate and within the confines of acceptable peer review practice. The Science Advisory Report received consensus at the meeting.

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APPENDICES

APPENDIX 1: LIST OF MEETING PARTICIPANTS

Name	Affiliation
Amyot, Keith*	Fish Bay Scallop Association (FBSA)
Bellman, Doug	Fish Bay Scallop Assn. (FBSA)
Broome, Jeremy	DFO Maritimes - Population Ecology Division (BIO)
Burns, Carmen*	Fish Bay Scallop Association (FBSA) / LMI Fisheries
Chaney, Trisha	Maine Department of Marine Resources
Collins-Smoot, Scott*	DFO Maritimes - Oceans & Coastal Management
Curran, Kristen	DFO Maritimes - Centre for Science Advice
Docherty, Anne	DFO Maritimes - Fisheries and Aquaculture Management
Francis, Lucy*	Whitman Conservation Group
Fry-Buchanan, Joy	Atlantic Herring Co-op / Fish Bay Scallop Assn. (FBSA)
Glass, Amy*	DFO Maritimes - Population Ecology Division (BIO)
Greenlaw, Michelle	DFO Maritimes - Coastal Ecosystem Science
Guenther, Lydia	Nauskeag East Resource Center
Hubley, Brad	DFO Maritimes - Population Ecology Division (BIO)
Jayawardena, Bruce	Wallwood Nation Conservation Council (WNCC)
Keith, David	DFO Maritimes - Population Ecology Division (BIO)
London, Evelyn	Shinnecock Tribal Nation - Fisheries
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Weaver, Wendy	NE Dept. Fisheries & Aquaculture - Maine
Wilson, Christa	DFO Maritimes - Fisheries and Aquaculture Management

* Only attended Day 1 (November 17th) of the meeting – did not attend Day 2 (November 18th) when Science Advisory Report was reviewed.

APPENDIX 2: MEETING TERMS OF REFERENCE

Assessment of Bay of Fundy Scallop in Scallop Production Areas (SPAs) 1A, 1B, and 3-6

Regional Peer Review - Maritimes Region

17-18 November 2015
Dartmouth, NS

Chairperson: Tara McIntyre

TERMS OF REFERENCE

Context

In support of the fishery for scallop in the Bay of Fundy Scallop Production Areas (SPAs) 1, 3, 4, 5, and 6, DFO Maritimes Fisheries and Aquaculture Management Branch has asked DFO Science for an assessment of resource status and the consequences of various harvest levels to inform management measures and recommendations for the 2015/2016 season. The summary of bycatch species information will be used by DFO to monitor interactions of the fishery with non-target species. The last assessment of Bay of Fundy Scallop was conducted in November 2013 (DFO 2014). An interim assessment update for the fishery was conducted in November 2014 (DFO 2015).

Objectives

- Assess the status of scallop stocks by SPA (1A, 1B, 3, 4, 5, and 6), taking into account available commercial and survey information.
- Using established reference points, harvest strategies and indicators, assess the outcomes of different harvest levels in the SPAs for the 2015/2016 season, as well as provide interim advice for SPAs 1A, 1B, 3 and 4 (note: Reference point refinement when additional information is available).
- Assess the consequences of different harvest levels in the SPAs for the 2016/2017 season
- Summarize available bycatch of non-target species information and identify any notable changes in occurrence of these bycatch species relative to previous years.

Expected Publications

Science Advisory Report
Proceedings
Research Document

Participation

DFO Science
DFO Fisheries and Aquaculture Management
Aboriginal communities / organizations
Provincial (NS and NB) governments
Fishing Industry

References

DFO. 2014. Assessment of Scallops (*Placopecten magellanicus*) in Scallop Production Areas 1 to 6 in the Bay of Fundy. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/018.

DFO. 2015. Scallop (*Placopecten magellanicus*) in Scallop Production Areas 1 to 6 in the Bay of Fundy: Stock Status Update for 2014. DFO Can. Sci. Advis. Sec. Sci. Resp. 2015/002.

APPENDIX 3: MEETING AGENDA

Assessment of Bay of Fundy Scallop in Scallop Production Areas (SPAs) 1A, 1B, and 3-6

Maritimes Region Science Advisory Process

Lewis H. King Boardroom
Bedford Institute of Oceanography
Dartmouth, NS

17-18 November 2015

Chairperson: Tara McIntyre

DRAFT AGENDA

17 November 2015 – Tuesday

09:00 – 09:30	Introductions and review of agenda
09:30 – 09:50	Presentation on pancake batter tunicate in the Bay of Fundy
09:50 – 10:15	Assessment Overview
10:15 – 10:30	Break (hospitality provided)
10:30 – 11:15	Review of SPA 1A
11:15 – 12:00	Review of SPAs 4 and 5
12:00 – 13:00	Lunch (not provided – cafeteria on-site)
13:00 – 13:30	Review of SPA 3
13:30 – 14:15	Review of SPA 1B
14:15 – 14:30	Break (hospitality not provided – cafeteria on-site)
14:30 – 15:30	Review of SPA 6
15:30 – 15:45	Bycatch
15:45 – 16:30	Conclusions / Discussion

18 November 2015 – Wednesday

09:00 – 09:30	Review of Day One
09:30 – 10:15	Review of Science Advisory Report
10:15 – 10:30	Break (hospitality provided)
10:30 – 12:00	Review of Science Advisory Report (continued)
12:00 – 13:00	Lunch (not provided – cafeteria on-site)
13:00 – 14:30	Review of Science Advisory Report (continued)